2C210

RMRS Rocky Mountain Remediation Services, L.L.C.
... protecting the environment
Rocky Flats Environmental Technology Site
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000060955

CORRES. CONTROL
OUTGONG LTR NO.

DOE ORDER # None
96RF00498

January 22, 1996

96-RF-00498
96-RM-ER-0008-KH

DIST.	LTR	ENC
Bengal, P.		
Benson, C. A.		
Buddy, M. S.		
Evans, C. S.	X	X
Findley, M.		
Guinn, G.		
Guinn, L.		
Hopkins, J.		
Jenkins, K.		
Jierree, C.		
Konwinski, G.		
Law, J. E.	X	X
Luker, R.S.		
McAnally, J. L.		
McHugh, M. F.		
Motyl, K. M.		
Parker, A. M.	X	X
Primrose, A. L.	X	X
Power, A.		
Schubbe, D. L.		
Steffen, D. E.		
Tyson, A. M.		
Zeile, H.		
Lovseth, TP	X	X
ER REC CTR (2)	X	X
RMRS CC	X	X
CORRES.CONTROL	X	X
TRAFFIC		

CLASSIFICATION		
UCNI		
UNCLASSIFIED	X	X
CONFIDENTIAL		
SECRET		

AUTHORIZED CLASSIFIER SIGNATURE
DOCUMENT CLASSIFICATION
REVIEW WAIVER PER
CLASSIFICATION OFFICE
DATE
IN REPLY TO RFP CC NO:
NA

ACTION ITEM STATUS
☐ OPEN ☒ CLOSED
☐ PARTIAL

LTR APPROVALS: 22.015.F

ORIG & TYPIST INITIALS:
JEL:TPL:dql

Christine S. Dayton
Kaiser-Hill, L.L.C.
Rocky Flats Environmental Technology Site
P. O. Box 464, Bldg. T130C
Golden, CO 80402-0464

RESPONSES TO COMMENTS, REV. 0, STRATEGIC PLAN FOR THE MANAGEMENT AND REMEDIATION OF GROUNDWATER AT THE ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE (KH00003NS1A) – JEL-014-96

We are pleased to submit informal responses to Kaiser-Hill, L.L.C.'s comments regarding the subject document. For your reference, the reviewer's comments also are attached. We will meet with the K-H personnel that participated in this review to assure that their concerns over groundwater issues are being addressed.

Please call me at extension 4842 if you have any questions regarding these responses.

John E. Law, P.E.
Remediation Manager
Sitewide Actions

TPL:dql

Attachment:
As Stated

cc:

FEB 1996
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ADMIN RECORD

SW-A-004200

Responses to Comments by G. Setlock, K-H

1.) The text will be amended. Further characterization is needed in several areas where plume migration may eventually impact surface water. Data gaps as a subject deserves discussion. Justification for a preference for passive treatment will be provided.

2.) We know they want certain actions in areas where the plumes are below 100 x MCLs, however, changing the text may not be necessary.

3.) The Windsite well is not on RFETS property. The existing wells and drains used extract water at RFETS will probably be phased out in the near term. In spite of past practices, we interpret the vision to say that in future, the consumptive use of groundwater will not be allowed.

4.) The text will be amended to expand the discussion of inorganics in groundwater (including radionuclides and metals).

5.) The text shall be amended to include a reference and brief discussion of the West Spray Field.

6.) A discussion of current groundwater extraction and treatment activities will be added to the text. Recharge from leaking pipes is addressed in Section 4.2.7. We have not performed site-specific studies relating seeps to soil slumping. We will reference mapping that shows the widespread distribution of landslide deposits and seep locations at RFETS. One of the arguments for passive remediation is the minimal anticipated impact on seeps and wetlands.

7.) The text shall be amended to reflect recent discussions with the regulators regarding the Nitrate Plume. Also, the recent replumbing and future need to operate the ITS will be mentioned.

8.) Exposure to groundwater is expected to be brief if at all due to dewatering required for most construction work. In addition, PPE will be used to eliminate or break exposure pathways.

9.) RFEDS data supports the following statements: "... it is likely that Rocky Flats Plant has contributed some uranium to the local groundwater. However, based on the background studies..., the extent of this contribution does not exceed the maximum contribution from natural sources."

10.) The text shall be amend to more clearly state the assumptions and the philosophy of this strategy.

2

11.) An explanation will be provided that will justify the lack of radiological plumes on the ranking list.

12.) See response for item 2. Also, we have agreed to place the plumes on the list for Environmental Restoration Ranking based on additional criteria of weighing priority with measured impacts to surface water.

13.) The text shall be revised to discuss the specific activities that will be integrated under the Groundwater Monitoring Program.

14.) With K-H's concurrence, the well abandonment liability issue will be addressed by ASAP.

15.) Section 6 will be combined with section 7 for a discussion of what our next step will be.

16.) The text will be modified to resolve inconsistencies between ranking, plume descriptions and schedule items.

Responses to Comments by S. Hahn, K-H

Groundwater Plumes
The text, maps and ranking will be integrated to clarify the plume descriptions. The maps will be annotated to identify individual plumes.

Groundwater preferentially flows along channels cut into bedrock where these channels occur, however, there are other hydrogeologic controls such as hydraulic gradient, distribution of subcropping sandstones and claystones and geomorphology. This statement will be added to the text.

A generalized potentiometric surface map will be presented in this document. There are no distinct groundwater watershed boundaries on this site with the exception of OU2 which is hydraulically separated from the IA groundwater by Walnut Creek. We believe the most appropriate model of IA is one where it is considered a single watershed with various local sources. Groundwater flow paths will be more clearly identified on Fig. 4-1 and Fig. 4-2.

Section 1
The ranking of plumes will be clarified. Perhaps the inclusion of Fig. 1-1 is confusing and not germane to strategy as a whole.

Subsequent to the publication of this document, K-H has proposed alternate wording for the Vision to reduce contradictory statements within the text, however, the working group has interpreted the Vision to be no consumptive use of groundwater. Where possible, we will attempt to identify potential contradictions and state our assumptions related to the vision.

Offsite refers to lands beyond the Site boundary as shown of Fig. 1-1 and onsite refers to lands within the Site boundary. This will be clarified in the text.

Section 2
It is apparent that we have failed to communicate the favorable aspects of site hydrogeology that tend to mitigate the spread of contaminated groundwater. The plumes are slow moving. The creeks act as hydraulic barriers. The stratigraphy provides natural containment. The UHSU is an isolated system with a "good bottom" that prevents downward vertical migration. The few locations with contamination in the LHSU are isolated and contained with no pathway to receptors. Section 2 will be revised accordingly.

The isolated bedrock sandstones referred to in the text are part of the UHSU. There is no known hydraulic connection between domestic wells and the impacted groundwater at Rocky Flats. Fig. 4-1 and Fig. 4-2 shows groundwater plumes in the UHSU, not the LHSU.

Section 3
A list and map showing the location of Tier II wells are being added to the text.

Unfortunately, the wording from the "Action Level Framework" is currently in development. Upon final agreement, a picture of what these exceedances mean will be known and clarified. We propose to expand the discussion in the text to indicate to all parties what we think the "Action Level Framework" means in terms of remedial actions. We know they want certain actions in areas where the plumes are below 100 x MCLs, however, changing the text may not be necessary.

Section 4
Clean-up requirements are a function of both action levels and standards as stated in this document. Section 3.2.1 will be expanded with an evaluation of the criteria to show how we selected plumes requiring remediation. We are considering adding a diagram to illustrate the steps leading to the conclusion that action is necessary. Pump & treat with SVE are not effective, for the most part, at RFETS due to low transmissivities. This fact will be emphasized in the text. OU7 is addressed in this document at the request of the regulatory agencies. Their concern is that leachate and contaminated groundwater daylights at the seep and has the potential to impact surface water.

The goal of the action level framework being developed is to prevent contamination of surface water, and to treat contamination holistically. Therefore, the action to remove the source from a plume, or to treat contaminated groundwater prior to discharge into surface water are acceptable. The ranking is based on the ratio to the 100 X MCL action levels.

Section 6
Section 6 will be integrated with section 7 to substitute a schedule for a discussion of what our next steps will be.

Action levels are intended to be triggers for evaluation and possibly remediation. They are not the same as establishing the priority for a given action. Action levels are not compliance standards. The text will be revised to make these distinctions clear.

Section 7
RMRS is committed to developing a consensus for remedial actions and meeting K-H's expectations regarding this document.

Responses to Comments by M.L. Hogg, K-H

A reference list will be added to the document. We are waiting on the State to provide the missing tables in Appendix C.

Figure 1-2 shall be annotated to show referenced locations. Figure 4-1 and Figure 4-2 shall be annotated with labels to identify individual plumes referenced in the text.

The text shall be revised to make clear the distinction between action levels and cleanup standards. Also, the use of MCLs vs. 100 X MCLs will be clarified.

Where MCLs are not available for a given constituent, we propose to use the appropriate PPRG as a substitute action level.

The discussion of inorganic constituents such as radionuclides and metals in groundwater shall be added to the text.

MEMORANDUM

From: Steve Hahn/KH

To: Chris Dayton/KH

Copies: Karen Wiemelt/KH
Ann Sieben/KH

Date: January 11, 1996

Subject: Sitewide Groundwater Strategy--Review Comments

I looked briefly at the draft report dated December 1995 and have the following comments:

Groundwater plumes shown in Figures 4-1 and 4-1 are not identified, and there appears to be only a casual relationship these figures and the plume descriptions presented in Section 4.2 of the text and the plume rankings presented in Section 4-3 of the text. For example, there are four "green shaded" areas on Figure 4.2, eight plume descriptions presented in Section 4-2, and ten plume rankings in Section 4.3.

Furthermore, there appears to be a disconnect between the plumes described in Section 4 of the report, and the description of groundwater flow at the site presented in Section 2 (i.e., "Groundwater in the UHSU preferentially flows along pre-existing channels cut into bedrock.

To make sense of all this, I would expect that Section 2 would include a map showing the delineating of various "groundwater watershed boundaries" at the site, as well as the direction(s) of groundwater flow within those watershed boundaries. This information, when overlain on by the shaded areas presented in Figure 4-1, would produce a discrete number of plumes that can easily identified, labeled and ranked.

Section 1 presents the Site Vision and proposed future land uses for various areas of the site. Trouble is, I don't see the connection between this information and the proposed Groundwater Strategy. For example, you don't use "intended land use" as a criteria for ranking groundwater plumes in Section 4.3.

Actually, the proposed Site Vision confuses the whole issue of "what to do with contaminated groundwater." Site Vision says (to me), "None of the land uses proposed for the site would preclude the future use of groundwater." Groundwater Strategy says (to me), "Use of onsite groundwater will not be allowed." Thus, the Groundwater Strategy appears to be inconsistent with the Site Vision.

As an added complication, neither Figure 1-1 nor the text provide definition of "onsite" (where groundwater use is prohibited) versus "offsite" (where groundwater use is allowed).

Section 2 describes the bedrock unit at the site as both an aquifer (i.e., the LHSU with "sufficient water to support limited house-hold use in selected locations") and an aquitard (i.e., "the LSHU effectively acts as a hydraulic barrier to downward flow"). Although I'd like to believe and proceed forward with the "aquitard" interpretation, I find it hard to believe that somewhere/somehow there isn't some kind of hydraulic connection between

the LHSU at Rock Flats and the domestic well users in the immediate vicinity of Rocky Flats.

Thus, I suggest that one component of the Groundwater Strategy should be, "What are we going to do with contaminants in the LSHU?" Think about it, the "Outer Buffer Zone" where unrestricted land use and (presumably) groundwater use is allowed, is situated only a "stones throw" from the groundwater plumes shown on Figure 4-1.

Section 3 introduces Tier I and Tier II action levels. This whole presentation is really confusing. There are no figures or tables in Appendix C, and no clear description in the text of what is being proposed. I can't tell if Tier I/Tier II corresponds with two lists of wells, or two shaded areas on a map. In either case, one would expect a logic-link between Figure 1-1 (i.e., the Site Vision) and Figure C-?? (i.e., the map delineating Tier I/Tier II areas). There should also be discussion in the text presenting this relationship.

I think I understand what is meant by a Tier II area/well, i.e., a 1.0 * MCL exceedance would trigger additional monitoring and (potentially) a remedial action. I don't understand at all what is meant by a Tier I area/well. As presented, a 100 * MCL exceedance would trigger an "evaluation" to determine if remedial action is necessary. To me this provides no guidance/direction whatsoever. We're currently in the "evaluation" mode and the Groundwater Strategy should attempt to lead us out of the dark and into the light. How is anyone supposed to assess if the remedial actions described in Section 7 are adequate, necessary and appropriate?

Section 4 describes potential remedial technologies, identifies plumes, and ranks them. I have a problem with the "Groundwater Remediation" subsection. First, it seems inappropriate to be talking about "how to remediate groundwater" when Section 3 fails to identify cleanup requirements--or even the need to take action. Second, the *Assumptions* section proposes: 1) source removal (presumably soils), 2) containment, and 3) passive barriers. It seems really strange that "conventional" technologies for VOAs in groundwater, i.e., soil vapor extraction and "pump and treat" are excluded. Third, the proposed technology for OU7 (i.e., passive collection and treatment) has nothing to do with groundwater plume remediation. What we're doing at OU7 is an 18-month-long, temporary cleanup of a surface water seep. Nothing will be done to remediate the groundwater.

The "Plume Ranking" subsection is interesting. However, it confuses the whole concept being proposed. Will we take action at a plume because one of the "two-tier action levels" in Section 3.2 is exceeded, or will we take action at a plume because it ranks high on the priority list?

Section 6 is titled "Conceptual Schedule;" however, not a single date is presented. It 's probably more appropriate to call this section a "Conceptual Sequence."

If you believe the first sentence of this section, the whole concept of "two tier action levels" has no bearing on what gets done at the site. Furthermore, I have little confidence that the actions identified will bring the site into compliance with those "two tier action levels" (whatever they are).

Section 7 includes the sentence: "The following proposed conceptual actions would be the direct result of applying the action levels for groundwater remediation within the framework of the site vision ..." Really?? With no definition of what the action-levels mean, with no map of where Tier I and II areas are located, with a "conceptual schedule" that uses priority ranking (not action levels), and (potential) disagreement as to appropriate

remedial technologies, I can't possibly imagine that there will be consensus on the list of proposed remedial actions presented.

KAISER • HILL
COMPANY

INTEROFFICE MEMORANDUM

DATE: January 15, 1996

TO: Debbie Whaley, K-H, T130C, X-4488

FROM: GHS George H. Setlock, K-H, T130C, X-4457/D5380

SUBJECT: COMMENTS ON DRAFT STRATEGIC PLAN FOR THE MANAGEMENT AND REMEDIATION OF GROUNDWATER AT THE ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE - GHS-703-96

Per your 12/22/95 request (See attached memo), I have reviewed the subject document. Since I had only minor questions/comments/suggested changes-additions, I am providing those in a memo format versus a redlined copy of the groundwater strategic plan text. My review comments are as follows:

1) A succinct, high-level overview of the RFETS groundwater characterization efforts to date would be a useful addition to this strategy. Based upon some of the comments in Section 4.0, one could imply that further characterization is sorely needed to understand the hydrogeology of the site [and that this step would be an essential prerequisite to a defensible prioritization and remediation planning effort]. Additionally, a discussion on the general background and RFETS appropriateness of the outlined *passive* groundwater treatments [versus *pump and treat* treatments] at RFETS is recommended. The single sentence discussion [page 4-6] of this RFETS approach rationale is inadequate considering that this represents the proposed long-term RFETS GW remediation approach, but has never been utilized at RFETS.

2) This document repeatedly references the 100 x MCLs RFETS approach that is currently being disavowed by CDPH&E. This recent development with the regulator needs to be footnoted or otherwise noted in this document.

3) Section 1.0 (Introduction) - "Use of onsite groundwater will not be allowed". This position needs to be reconciled with the groundwater well historically used for drinking/potable water at the Wind Site Facility in the Northwest buffer zone. [Same comment for Section 3.2 Groundwater on page 3-2, and Section 4.2.2 119.1 Groundwater Plume on page 4-4, and Section 2.2.3 Mound Groundwater Plume on page 4-5, etc. - Note: similar statements have been *boilerplated* into all Section 4.2 subsections].

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4) The statement "Metals and rads were not included because they are not generally mobile in groundwater' needs to more thoroughly discussed c/o solubilities and uranium/thorium levels in Coal Creek Canyon wells, the different dose correction factors for RFETS radionuclides and the 1990-1996 monitoring data in RFETS buffer zone boundary monitoring wells (see page 3-3).

5) The west spray field area is not included [either in Figure 1-2 or in text proper] and needs to be included either by reference or disclaimer due to the extensive historical focus by regulators, landowners and general RFETS stakeholders. An alternative section to discuss this topic would be Section 4.1 on page 4-1.

6) Section 2.0 (Groundwater at RFETS) - Three RFETS activities/facts need to be cited and/or discussed: - (a) UV-peroxide treatment and discharge to surface waters at 881 Hillside, and (b) significant influx of industrial area water to UHSU via sewer trunk lines (approximately 10M gallons/year ?); (c) groundwater seeps and related surficial soil slumping.

7) Section 4.2.8 (Additional Plumes - Solar Ponds Nitrate Groundwater Plume) - This section needs to cite recent *replumbing* of ITS water at RFETS, as well as, the possibility that with a stream classification change [from drinking water to agricultural usage] the likelihood of this water being used for irrigation is high.

8) The statements made in Section 4.0 (Groundwater Plumes and Remediation) need to be assessed in light of CDPH&E's approach to protecting future RFETS construction workers.

9) Does available RFETS ER data support uranium complexing/transport/cleanup being summarily dismissed in Section 4.2.6 ?

10) I would suggest outlining a general remediation strategy in the assumptions area of Section 4.0 versus explicitly citing a specific remediation strategy in all Section 4.2 subsections. Adopting the latter versus the former approach will allow more of a sitewide versus OU specific remediation approach that is mentioned as one of the goals of this groundwater strategy plan.

11) Same comment as in (10), provide better justification for stakeholders as to why radionuclides are explicitly exempted from plume ranking process (Section 4.3, page 4-11).

12) Same comment as (2) with respect to plume ranking process (Section 4.3, page 4-11).

11

13) Section 5.0 (Groundwater Monitoring) - "The groundwater monitoring program will be integrated to the maximum extent practical" - please elaborate, does this mean only internal to GW program or also externally [with similar RFETS ongoing SW monitoring program c/o sample collection, radionuclide screening /SMO coordination, procedures, etc.] ?

14) Currently the RFETS Well Abandonment and Replacement Program (WARP) is zero-funded in FY96. Some mention needs to be included on the site's plans and schedule for well closures, since only a fraction (25% ?) of the site's groundwater monitoring wells are currently being sampled [on an annualized basis].

15) "Schedule" generally connotes timetable which is not part of Section 6.0 [assume FY96 ?]; also request reconciling why these listed actions are not consistent with priorities in a previous section (i.e. Section 4.3 Plume Ranking).

16) Section 7.0 (Conclusions and Summary) - same comments as in (2) (i.e. 100 x MCLs) and (15) (i.e. priorities are not consistent with Section 4.3 Plume Ranking).

Enc. (1) (as stated)

cc.
C. Dayton
G. Kelly

MLH

Comments from Mary Lee Hogg on *Strategic Plan for the Management and Remediation of Groundwater at the RFETS* (draft, RMRS Dec. 1995).

All of these are general comments. See hard copy for annotated comments.

The document lacks a reference list and several referenced tables.

Several more maps are needed in the document. Several locations, IHSSs, etc. are referred to but not shown on maps. This will be very confusing for readers not acquainted with the Site.

Throughout the document, the use of "action levels" vs. "cleanup standards/goals" is ill-defined and confusing. I understand the difficulty with clarifying these somewhat nebulous terms, but a clear understanding of the difference and how they are used in this document is critical. Similarly, the use of MCLs and 100 X MCLs is confusing.

Certainly for the major risk drivers in groundwater plumes, MCLs are available. However, this document fails to express what standards or actions levels will be used for constituents lacking MCLs.

Potential movement of metals, radionuclides, and SVOCs from subsurface soils to groundwater cannot be dismissed with a single sentence. I agree completely with your conclusion, but we are already facing this battle for radionuclides entombed during D&D, and the Agencies are adamant about proof of "no impact" to groundwater via modeling or other approaches.

If I may be of assistance in resolving these issues or any others concerning this document, please contact me at X8465.

cc L. Brooks

13/13